

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A magnetic recording medium comprising:
a nonmagnetic substrate; and
at least three layers formed on the nonmagnetic substrate and comprised of a non-magnetic orientation-controlling layer for controlling orientation of a layer formed directly thereon, a perpendicular magnetic layer having an easily magnetizing axis oriented mainly perpendicularly relative to the nonmagnetic substrate, and a protective layer;
said perpendicular magnetic layer comprising two or more magnetic layers, at least one of said magnetic layers being a lower layer having Co as a main component and containing Pt and an oxide and at least another of said magnetic layers being an upper layer having Co as a main component and containing Cr and no oxide;
said lower magnetic layer being directly adjacent and in contact with the orientation-controlling layer and comprising magnetic crystal grains isolated by the oxide and dispersed in the lower layer and said crystal grains vertically penetrating said lower layer in columnar forms;
and
said upper layer comprising magnetic crystal grains that are formed and epitaxially grown on the magnetic crystal grains of the lower layer in a ratio of one to one on an upper surface of said lower layer.

2. (canceled).
3. (currently amended): A magnetic recording medium according to claim 1, wherein said oxide is an oxide of at least one nonmagnetic metal selected from among Cr, Si, Ta, ~~Al~~ and Ti.
4. (previously presented): A magnetic recording medium according to claim 1, wherein said oxide is Cr_2O_3 or SiO_2 .
5. (previously presented): A magnetic recording medium according to claim 1, wherein said magnetic layer containing the oxide has an oxide content of 3 mol % or more and 12 mol % or less.
6. (previously presented): A magnetic recording medium according to claim 1, wherein said magnetic layer containing the oxide has Co as a main component and has a Cr content of 0 at % or more and 16 at % or less and a Pt content of 10 at % or more and 25 at % or less.
7. (previously presented): A magnetic recording medium according to claim 1, wherein said magnetic layer containing the oxide contains at least one element selected from the group consisting of B, Ta, Mo, Cu, Nd, W, Nb, Sm, Tb, Ru and Re and has a total content of said at least one element that is 8 at % or less.

8. (previously presented): A magnetic recording medium according to claim 1, wherein said magnetic layer containing no oxide has Co as a main component and has a Cr content of 14 at % or more and 30 at % or less.

9. (previously presented): A magnetic recording medium according to claim 1, wherein the magnetic layer containing no oxide has Co as a main component and has a Cr content of 14 at % or more and 30 at % or less and a Pt content of 8 at % or more and 20 at % or less.

10. (previously presented): A magnetic recording medium according to claim 1, wherein said magnetic layer containing no oxide contains at least one element selected from the group consisting of B, Ta, Mo, Cu, Nd, W, Nb, Sm, Tb, Ru and Re and has a total content of said at least one element that is 8 at % or less.

11. (canceled).

12. (previously presented): A magnetic recording medium according to claim 1, wherein said perpendicular magnetic layer contains two or more oxide-containing layers.

13. (previously presented): A magnetic recording medium according to claim 1, wherein said perpendicular magnetic layer contains two or more layers containing no oxide.

14. to 17. (canceled).

18. (currently amended): A method for the production of a magnetic recording medium comprising a nonmagnetic substrate and at least three layers formed on the nonmagnetic substrate and comprised of a non-magnetic orientation-controlling layer for controlling orientation of a layer formed directly thereon, a perpendicular magnetic layer having an easily magnetizing axis oriented mainly perpendicularly relative to the nonmagnetic substrate, and a protective layer,

said method comprising;

forming said perpendicular magnetic layer of two or more magnetic layers, wherein at least one of said two or more magnetic layers is a lower layer having Co as a main component, and containing Pt and an oxide and at least another of said two or more magnetic layers is an upper layer having Co as a main component, and containing Cr and no oxide;

forming said lower layer directly adjacent and in contact with the orientation-controlling layer and with magnetic crystal grains isolated by the oxide and dispersed in the lower layer and vertically penetrating the lower layer in columnar forms; and

forming said upper layer by forming and epitaxially growing magnetic crystal grains on the magnetic crystal grains of the lower layer in a ratio of one to one on an upper surface of the lower layer.

19 and 20. (canceled).

21. (previously presented): A method according to claim 18, wherein said perpendicular magnetic layer contains two or more oxide-containing layers.

22. (previously presented): A method according to claim 18, wherein said perpendicular magnetic layer contains two or more layers containing no oxide.

23. and 24. (canceled).

25. (previously presented): A method according to claim 18, wherein said perpendicular magnetic layer is formed using a film-forming gas to which an oxygen gas is added.

26. (previously presented): A magnetic recording and reproducing apparatus furnished with a magnetic recording medium and a magnetic head for recording and reproducing information in said magnetic recording medium, said apparatus being characterized in that said magnetic recording medium is the magnetic recording medium set forth in claim 1.